Implementation Strategy: Areas of Natural and Scientific Interest

Parks and Recreational Areas Branch
Outdoor Recreation Group

Ontario
Ministry of Natural Resources
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Printed in Ontario, Canada

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IMPLEMENTATION STRATEGY: AREAS OF NATURAL AND SCIENTIFIC INTEREST

THE BACKGROUNDER

On June 2 1983, the Minister of Natural Resources presented the Ministry's new land use guidelines to the people of Ontario. These guidelines achieved a province-wide concensus on the future use of Ontario's natural resources. They also called for the expansion of the Provincial Park System and created a new 'Cabinet Approved' provincial policy for Areas of Natural and Scientific Interest. This new policy states that:

> Areas of Natural and Scientific Interest (ANSI) are areas of land and water containing natural landscapes or features which have been identified as having values related to protection, natural heritage appreciation, scientific study or education.
>
> ANSIs may vary in level of significance. The most significant of these may contribute to the achievement of the Ministry's protection objective.
>
> Where ANSIs occur on public lands managed by the Ministry, it will ensure that the land uses and activities which occur, provide for the protection of identified values.
>
> On private lands, the Ministry will, through co-operation with others, attempt to ensure that landowners are aware of significant features on their properties and seek the owners' co-operation in protecting such features. The identification of areas of natural and scientific interest on private land does not indicate an intent of the Ministry to acquire this land.
>
> ANSIs encourage the protection of additional areas not regulated as provincial parks and provide a focus for both the public and private sectors to contribute to the protection of Ontario's natural heritage.

From: Backgrounder: Land Use Guidelines. Appendix D. Ontario Ministry of Natural Resources. Hon. Alan Pope, Minister. W.T. Foster, Deputy Minister. June 1983.

The new policy for Areas of Natural and Scientific Interest and the existing policy for Ontario Provincial Parks are designed to achieve the park's protection objective and that portion of the Ministry's conservation objective dealing with the protection of Ontario's natural heritage. Together, these policies will foster the protection of provincially significant natural features and landscapes, and provide a framework for the Ministry to work cooperatively with the Natural Heritage League *. The policy for Areas of Natural and Scientific Interest will also provide direction for other agencies and indivduals to protect areas of regional and local significance.

This strategy outlines the methods that the Ministry will use to achieve the protection and management of significant natural and scientific areas. The paper clarifies the relationships between Provincial Parks and ANSIs, outlines a Registry System for Provincial Parks and Areas of Natural and Scientific Interest, identifies the methods used to protect significant areas, and provides guidelines for their management. This implementation strategy will be followed by an approved Ministry Policy Statement and Procedural Directives designed to identify, protect and manage Areas of Natural and Scientific Interest.

RELATIONSHIPS BETWEEN PROVINCIAL PARKS AND AREAS OF NATURAL AND SCIENTIFIC INTEREST

Provincial Parks and Areas of Natural and Scientific Interest are two separate, but parallel programmes used by the Ministry to protect and manage Ontario's most significant natural features and landscapes.

Parks and ANSIs are similar in many ways (see figure 1). Both are selected to achieve Provincial Park protection and Ministry conservation objectives. Specifically, they are selected to satisfy the provincial park 'earth science' and 'life science' programme targets as defined in: Ontario Provincial Parks Planning and Management Policies.

Earth science targets are based on a conceptual framework that identifies rock types, fossil assemblages, and associations of landforms representative of Ontario's past and present geological environments (Parks and Recreational

* **FOOTNOTE:** The Natural Heritage League is a coalition of conservation groups dedicated to the protection and management of Ontario's natural heritage. Its membership which includes the Ministry of Natural Resources, Niagara Escarpment Commission, The Nature Conservancy of Canada, Federation of Ontario Naturalists and others provide expertise and guidance on natural heritage issues to the government through the Ontario Heritage Foundation.

FIGURE 1. RELATIONSHIPS BETWEEN PROVINCIAL PARKS AND AREAS OF NATURAL AND SCIENTIFIC INTEREST

ATTRIBUTE	PROVINCIAL PARKS	ANSIs
Objective	MNR Conservation Park Protection	MNR Conservation Park Protection
Protection Targets	Earth Science Life Science	Earth Science Life Science
Production Targets	No	Yes, other MNR programs
Significance	Provincial Regional Local	Provincial Regional Local
Ownership	Crown	Crown,public and private
Legislation	The Provincial Parks Act (specific)	The Ontario Heritage Act The Public Lands, Mining, Planning and other Acts. (non-specific)
Protection	Regulation	Conservation Easement Management Agreements Land Use Designations
Management	Ontario Provincial Park Planning and Management Policies	ANSI Planning and Management Guidelines

Areas Branch, 1980). ANSIs will be selected to protect those outstanding rock and fossil localities and landform associations not already represented in Provincial Parks. To select these areas, existing geological information is evaluated, regional and theme studies are conducted, and representative areas are mapped and described. Areas with similar features are then compared against one another to identify candidate ANSIs.

Life science targets are based on a conceptual framework that identifies the landscapes, environments and community types that are typically found in each of Ontario's 13 site regions (Parks and Recreational Areas Branch, 1979). ANSIs are selected to protect those outstanding landscapes, environments and biotic communities not represented in Provincial Parks. To achieve this, reconnaisance surveys are conducted within each of the site regions to identify and describe the most representative natural landscapes, environments and communities. Selected natural areas are then comparatively graded, using standard criteria, to identify candidate ANSIs.

The earth and life science protection targets are also described in: Southern Ontario: Co-ordinated Program Strategy, Northeastern Ontario: Strategic Land Use Plan, Northwestern Ontario: Strategic Land Use Plan and are outlined in each of the District Land Use Guidelines. The Ministry will continue to review and update these targets and monitor how effectively they achieve Provincial Park and Ministry objectives.

Parks and ANSIs may also vary in significance. Nature Reserve Parks and Nature Reserve Zones in other park classes are established to protect provincially significant areas. Other park classes and zones may be used to protect areas of regional and local significance. ANSIs also may be established to protect areas of provincial and lesser significance. The use of ANSIs is recommended for areas located, on private lands, or for areas on Crown lands where natural values conflict with traditional resource uses. The Ministry will play an active role in identifying and protecting provincially significant ANSIs. It will also encourage, but not actively pursue, protection for areas of regional and local significance.

Provincial Parks and Areas of Natural and Scientific Interest are also very different. Parks are located on Crown land, regulated under The Provincial Parks Act and managed by Ministry policies. ANSIs may be located on either private, public, or Crown land; are not regulated; and may be managed by the Ministry, or others, to achieve a variety of objectives in addition to protection. ANSIs complement Provincial Parks by protecting significant features through means other than regulation. ANSIs also recognize the need to provide opportunities for resource uses which would not normally be permitted in Provincial Parks.

Provincial Parks and Areas of Natural and Scientific Interest are selected to depict the full range of natural features and landscapes found in Ontario. Not surprisingly, both include choice examples of the province's various wetland types. This overlap of parks and ANSIs with wetlands is viewed as an opportunity to strengthen the relationships between Provincial Park and Wildlife programmes. The nature of these relationships will be determined on a case-by-case basis by both programmes when a management plan is prepared. Similarily, parks and ANSIs provide an important mechanism to help protect habitat for rare and endangered species, non-game wildlife programmes and genetic resources for forestry. Again, these relationships can be effectively dealt with through management planning.

A REGISTRY SYSTEM FOR PROVINCIAL PARKS AND AREAS OF NATURAL AND SCIENTIFIC INTEREST

The Parks and Recreational Areas Branch will maintain a registry for all Provincial Parks and Areas of Natural and Scientific Interest. This registry will fulfill two major functions. First, it will provide an up-to-date listing of Ontario's provincially significant protected areas, and second, it will provide a method of measuring the extent to which these areas satisfy Provincial Park protection targets. Both functions will be facilitated by a computer record of the area's name; its jurisdiction, land tenure and current protected status; the major targets it achieves; and a brief description of its natural history. This information will be accessed from time-to-time to print detailed reports on the status of protected areas in Ontario.

Areas of Natural and Scientific Interest will be classified as being either 'nominated' , or 'protected'.

A Nominated ANSI is one which has been identified and recommended for protection by any government, or non-government, agency or individual. All ANSIs identified by the Ministry in its District Land Use Guidelines are considered to be Nominated ANSIs. Ministry staff and others may also propose new Nominated ANSIs at any time. These new proposals must be accompanied by an evaluation of the area's natural features, their significance, and their potential contributions to target achievement. If these proposals merit formal designation as a Nominated ANSI an official amendment will be made to the District Land Use Guidelines.

The Ministry of Natural Resources will prepare a Statement of Interest for all provincially significant Nominated ANSIs. This statement will document key resource management issues and propose actions to ensure the short-term

protection of the area. This Statement of Interest will be used by the Ministry to identify its concerns to others and to assist in its dealings with public and private landowners. The Ministry will also encourage others to undertake similar actions for regionally and locally significant Nominated ANSIs.

A Protected ANSI is a Nominated ANSI which has been afforded adequate protection. The nature and extent of this protection will be determined on a case-by-case basis depending on existing land uses and the character, significance and sensitivities of features. An area will remain a Nominated ANSI until it has been elevated to Protected ANSI status. Conversely, a Nominated ANSI may also be dropped if its features are compromised, or a better area is found.

On Crown land, the Ministry will prepare resource inventories and management plans for all provincially significant ANSIs. The final plans will provide protection for significant features, while permitting other compatible uses of the area's natural resources. Crown land managed in this manner will be classed as a Protected ANSI and will contribute to the Ministry's protection objective.

On other public and private land, protection will be achieved with the complete cooperation of the landowner. The Ministry, with the help of the Natural Heritage League, will inform private landowners that their properties are part of a Nominated ANSI. Landowners who agree to protect their properties will be eligible to receive a 'Private Stewardship Award' from the League. At the landowners request, the Ministry will provide resource inventories for provincially significant ANSIs. The Ministry will also offer to provide a management plan which will document the goal, objectives and long term management prescriptions for each area. The management plan will resolve potential natural resource and land use conflicts. Those owners who manage their land to the standards prescribed in these plans will be presented with a certificate of recognition from the Ministry. These areas will be classed as Protected ANSIs and will contribute to the Ministry's protection objective.

PROTECTION OPTIONS FOR PROVINCIAL PARKS AND AREAS OF NATURAL AND SCIENTIFIC INTEREST

A series of protection methods ranging from 'total protection' through a variety of 'partial protection' options may be applied to natural and scientific areas. Total protection will be achieved by provincial nature reserves and conservation easements, while partial protection will be provided by other park classes, conservation easements, formal and informal landowner agreements and through designations in land use plans (see

FIGURE 2. THE RELATIONSHIP OF PROVINCIAL PARKS AND AREAS OF NATURAL AND SCIENTIFIC INTEREST TO PROTECTION OPTIONS

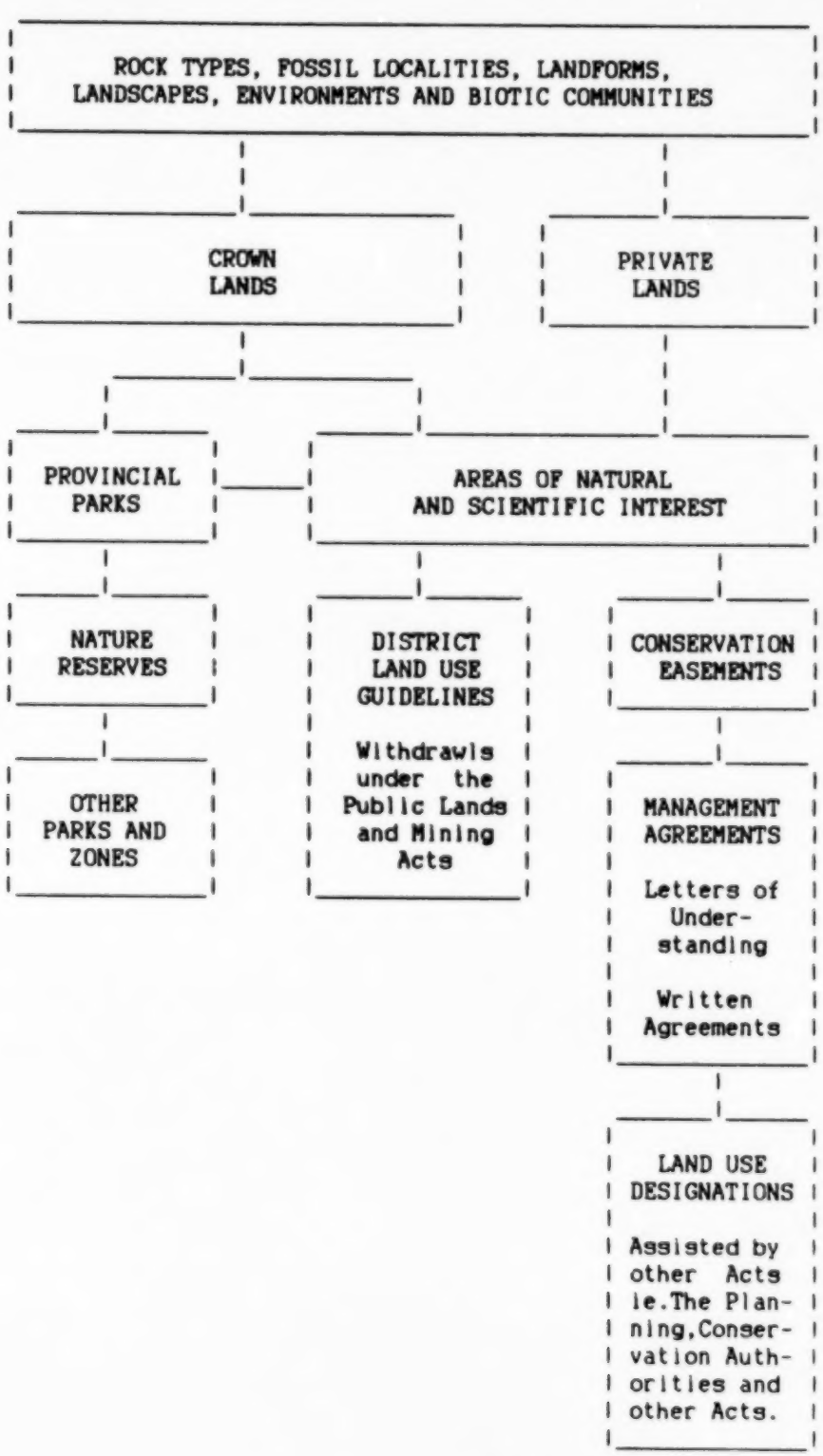

ROCK TYPES, FOSSIL LOCALITIES, LANDFORMS, LANDSCAPES, ENVIRONMENTS AND BIOTIC COMMUNITIES
CROWN LANDS
PRIVATE LANDS
PROVINCIAL PARKS
AREAS OF NATURAL AND SCIENTIFIC INTEREST
NATURE RESERVES
OTHER PARKS AND ZONES
DISTRICT LAND USE GUIDELINES
Withdrawls under the Public Lands and Mining Acts
CONSERVATION EASEMENTS
MANAGEMENT AGREEMENTS
Letters of Under-standing
Written Agreements
LAND USE DESIGNATIONS
Assisted by other Acts ie.The Plan-ning,Conser-vation Auth-orities and other Acts.

figure 2).

The Ministry of Natural Resources will be responsible for the protection and management of all ANSIs on Crown land. The Ministry will cooperate with other government agencies, municipalities and private landowners to achieve the protection and management of provincially significant ANSIs on other public and private land. To help protect ANSIs on private lands, a property tax rebate is currently being considered for those owners who manage their lands to mutually acceptable standards.

The Ministry of Natural Resources will also cooperate with the Ontario Heritage Foundation, The Nature Conservancy of Canada and other members of the Natural Heritage League. This will be accomplished by providing natural resource information, administrative and management expertise, logistic support, and through the joint implementation of conservation projects like the Natural Heritage League's landowner contact programme which was designed to communicate ANSI values and concerns to private landowners.

Provincial Nature Reserves

Provincial Nature Reserves and Nature Reserve Zones in other park classes afford total protection. Total protection is defined by the Ontario Provincial Park Planning and Management Policies (OMNR 1978, pp.NR-1-1 to NR-R-2). Recently regulated nature reserves that do not conform to these policies are considered to be exceptions.

Crown land ANSIs that are of provincial, or greater, significance and which are highly sensitive, threatened, or endangered, may be regulated as nature reserves under The Provincial Parks Act. The internationally significant Precambrian fossil beds at Schreiber Channel Provincial Nature Reserve, for example, were placed under regulation to guard against their over-collection and possible destruction. Similarily, the Agazzis Peatlands and other natural areas designated to represent a variety of ecosystems also have been regulated as nature reserves.

Private land ANSIs that meet similar criteria may also be regulated as nature reserves. This should normally occur when areas have been acquired and the cost of acquisition has been shared by the Ministry, The Nature Conservancy of Canada, Ontario Heritage Foundation or others. Only the most significant natural and scientific areas should be acquired. These areas should be acquired sparingly from willing sellers. The acquisition of Great Manitou Island by the Conservancy and Foundation and the designation of adjacent Crown land islands by the Ministry represents one such area recommended for regulation by the Ministry as a nature reserve.

Other Park Classes

ANSIs of regional and local significance may be afforded partial protection in wilderness and natural environment zones in other provincial park classes. The standards for partial protection for these options are defined in: Ontario Provincial Parks Planning and Management Polices (1978, pp.Wi-1-3 to Wi-R-1 and NE-1-3 to NE-R-1).

Conservation Easements

A conservation easement is a legal agreement between two or more parties that affords total protection or a high degree of partial protection. Conservation easements will be used primarily to afford protection to ANSIs on private lands. In some circumstances, easements may also be used to afford protection to ANSIs on public lands administered by other government agencies. The type of protection provided will be determined on a case-by-case basis depending upon the character and traditional use of resources and the wishes of the landowner.

Conservation easements should be used to protect provincially significant areas whose owners are interested in the long term protection of their lands. The Ontario Heritage Foundation, the Ministry and a private landowner recently negotiated such an easement for part of the Workmans Creek ANSI in Owen Sound District. This easement, granted under the authority of The Ontario Heritage Act, was established to protect a provincially significant bedrock and fossil locality. It affords legal protection for the ANSI by prohibiting actions which might threaten, or endanger, the area's significant features. It also provides for the maintenance of traditional agricultural activities and good forestry practices. In signing this easement the landowner has surrendered certain rights attached to her land. The Foundation is now investigating ways to compensate the landowner for these rights by providing tax concessions.

Additional easement candidates will be identified by the Ministry, or through the Natural Heritage League's landowner notification program.

Management Agreements

A management agreement can be a formal, or informal, arrangement between the Ministry and a private landowner, corporate body, or public agency. Such agreements would be used primarily on private land to afford varying degrees of protection depending upon the character and traditional use of resources and the wishes of the landowner.

An informal agreement would consist of a Letter of Understanding between the Ministry and the landowner. The letter would describe the ANSIs important features, outline

resource conflicts, prescribe an acceptable management strategy, and request the landowner to contact the Ministry should he/she decide to sell, or develop their lands. Landowner participation would be voluntary and not legally binding. As long as the landowner adheres to the management strategy outlined in the letter, his land would contribute to the achievement of Ministry protection targets. In return, the landowner would be eligible for a Private Stewardship Award from the Ministry or the Natural Heritage League.

If a landowner expresses interest in the long term protection of his/her land, the Ministry will provide detailed resource inventories and a management plan. The management plan will resolve resource conflicts and outline a strategy for the protection and utilization of the area. In return, the owner would agree to manage their land to the standards prescribed in the plan. Again, landowner participation would be voluntary. The actual management agreement; however, may be legally binding. The proposed custodialship agreement between the Ministry and the Ontario Heritage Foundation to manage the Fleetwood Creek ANSI, for example, would constitute a legally binding contract.

Land Use Designations

A land use designation may be a special policy area, or a formally zoned and managed area that provides varying degrees of protection. The nature of this protection will be determined, and resource conflicts will be resolved, on a case-by-case basis based on the area's significance, sensitivities and traditional uses.

On Crown land, all provincially significant ANSIs should be officially designated in the Ministry's District Land Use Guidelines. District Land Use Guideline ANSIs will be integrated into Crown Management Units and Forest Management Agreements as Areas of Concern. These areas, or portions of these areas, also may be designated as special zones and administered to protect natural and scientific values under Section 12 of The Public Lands Act. Further, these areas could be set aside for research and management under Section 11 of the same Act, and/or withdrawn from prospecting and staking under Section 36 of The Mining Act. If warranted, areas of lesser significance also could be designated or withdrawn. All ANSIs designated in District Land Use Guidelines will be mapped at suitable scales, their boundaries and features will be described, and plans will be prepared to guide management. The management plan will protect the area's values, while permitting other compatible uses of the areas natural resources.

On other public land and private land, the Ministry will assist conservation authorities, municipalities and other agencies in developing programmes to protect provincially significant ANSIs. Authorities, municipalities and agencies will be encouraged to write policies that: map and describe

areas; recognize their environmental and social values; provide land use, or zone, designations which afford protection; assess the impacts of new developments; and include a review process enabling the Ministry to monitor changing land uses. The Ministry will provide authorities, municipalities and agencies with resource inventories, assessments of potential environmental impact, and resource management expertise to mitigate these impacts for areas of provincial significance. The Ministry also will identify and encourage others to protect areas of regional and local significance.

GUIDELINES FOR THE MANAGEMENT OF AREAS OF NATURAL AND SCIENTIFIC INTEREST

Statements of Interest

A statement of interest provides a general description of a natural and scientific area and recommends a short-term management strategy for the protection and wise use of the area's natural resources. The primary purpose of the statement of interest is to protect the area's provincially significant features. It should also identify potential resource conflicts and recommend management that will protect natural values, while permitting traditional or other compatible resource uses. A statement of interest should include:

A Regional Director approval statement;

A description of the area's location, access, significant features, and other necessary resource information;

Maps showing location, boundaries, significant features and landownership in and adjacent to the area;

Management guidelines based on the significance and sensitivity of features. Guidelines should maintain an area's natural integrity and enhance opportunities for passive recreation, scientific research and education. Guidelines should also address potential management issues: ie. land tenure, existing and proposed development, native rights, industrial / commercial / residential activities, and client services. Only relevant issues should be addressed. and;

A discussion on how the needs of other resource programmes can be accommodated within the overall management framework.

Statements of interest will be prepared for all provincially significant areas on private, public and Crown land. The statement should outline the Ministry's interest in the area and provide a foundation for staff to approach and discuss an area with its landowner and other interested parties. Areas with potential resource conflicts, or areas where other Ministry programme initiatives are planned, or are already underway, should receive planning priority. If an area is threatened or endangered, and a statement of interest has not been prepared, it may be necessary to proceed directly to management planning.

Management Planning

A management plan provides a detailed description of a natural and scientific area and prescribes a long-term management strategy for the protection and wise use of the area's natural resources. The primary purpose of a management plan is to document and to protect an area's provincially significant features. The plan will ensure that planning, management and development are responsive to the wishes of the landowner, or managing agency. It should accommodate and/or integrate other potential uses and activities which do not conflict with the protection of an area's natural and scientific values. The management plan should also establish management priorities and provide a basis for auditing the development and management of areas. A management plan should include:

A Regional Director/Landowner approval statement;

An introduction that describes the location, boundaries, access, and significant features of an area. It should also identify past, present and proposed land uses;

A goal statement that outlines the overriding management philosophy for the area. Both the features being protected and the resources being utilized should be specified;

A series of specific objective statements dealing with protection, natural heritage appreciation scientific research, outdoor education and integrated resource management. The objectives should outline exactly what the management plan is supposed to achieve.

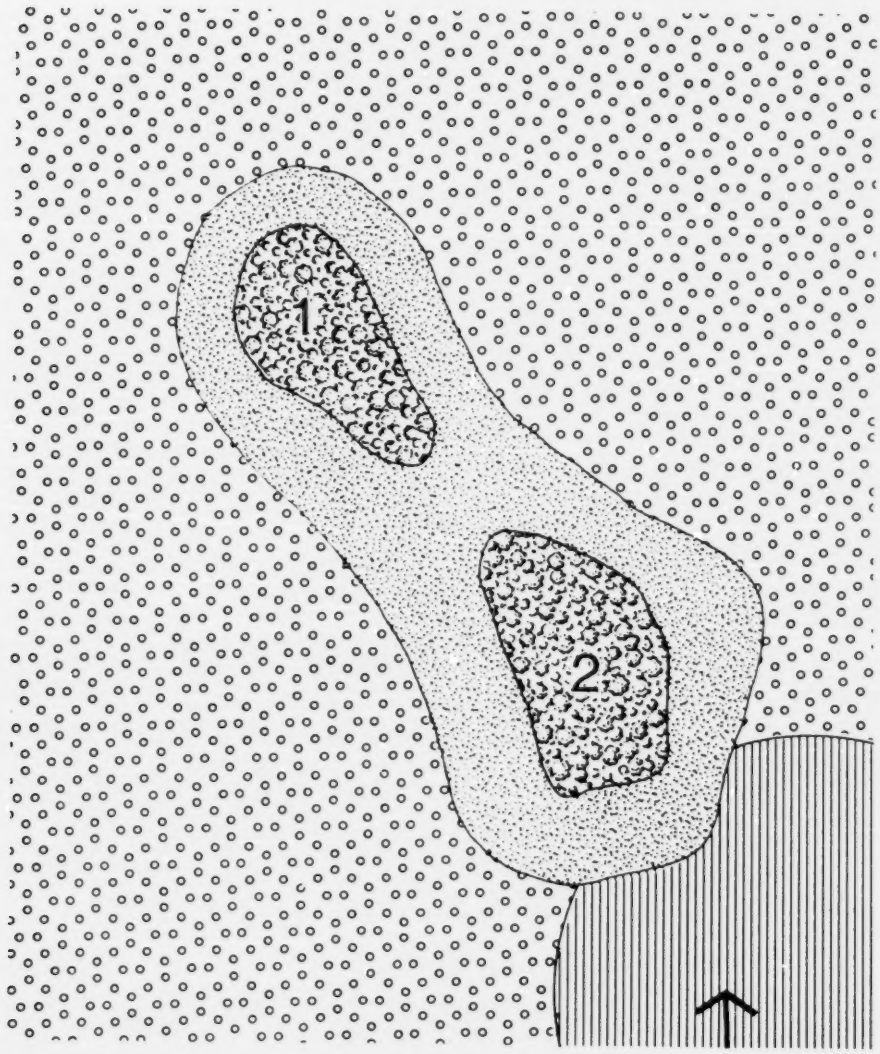
Zoning and associated management policies adapted to meet the needs of an individual area. Core zones (strictly protected or managed), Buffer zones, resource management zones and access zones will be identified to accommodate a wide range of management activities(see figures 3 through 6).The

numbers and types of zones will vary from one area to another based on the nature, significance and sensitivities of features and the demands by other resource sectors. All ANSIs designated to protect representative, natural, life science areas should include a strictly protected core zone. Zoning policies will address the management required to satisfy the objectives set for each area. and;

A strategy for the cost-effective implementation of the management plan.

Management plans should be prepared for all provincially significant natural and scientific areas on Crown land and for those provincially significant areas on private land upon the request of the landowner. In some cases, the management plan may be embodied within a conservation easement, or some other form of written agreement between the Ministry and a second party. Planning priorities should be placed on the most significant and threatened areas, or on areas where potential resource conflicts exist.

FIGURE 3. HYPOTHETICAL ZONING FOR AREAS OF NATURAL AND SCIENTIFIC INTEREST.



LEGEND

- 1 Core Zone 1 (Managed)
- 2 Core Zone 2 (Strict)
- Buffer Zone
- Resource Management Zone
- Access Zone

FIGURE 4. ZONING AND MANAGEMENT GUIDELINES FOR AREAS OF NATURAL AND SCIENTIFIC AREAS

Zoning and management guidelines are required to fully protect ANSI values. Such guidelines will ensure the ANSIs integrity, protect its significant and sensitive features, and help achieve the Provincial Park protection and Ministry conservation objectives. Each zone may, or may not, contain management activities depending on the compatibility of the activities and the zone and their affect on adjacent zones. A comparison of potential activities to zones will provide a management guideline based on:

Y Yes - management activity permitted provided that the significance or sensitivity of the ANSI values are not endangered.

M Maybe - management activity which may be employed that is not detrimental to the significance or sensitivity of the ANSI values if certain specific criteria or conditions are met.

N No - management activity not permitted as it is considered to be detrimental to the significance or sensitivity of the ANSI values.

LIFE SCIENCE ANSIs:

STRICTLY PROTECTED LIFE SCIENCE CORE ZONE

- o protected lands and waters designated to represent natural ecosystems, communities and species and having a high degree natural integrity, significance and sensitivity where only natural processes prevail without man's intervention.
- o serve as sanctuaries and benchmarks to monitor the natural changes in ecosystems and the effect of management activities on adjacent areas.

MANAGED LIFE SCIENCE CORE ZONE

- o areas containing natural aquatic or terrestrial ecosystems,communities and species where natural processes may be simulated, or other forms of environmental manipulation applied, to maintain a significant or sensitive community or species.
- o managed areas provide opportunities to maintain and study, under controlled conditions, near-natural communities and species that might otherwise be lost through natural succession or other kinds of environmental change.

BUFFER ZONE

- o lands and waters usually containing natural ecosystems,communities and species designated to shield strictly protected life science and managed life science core zones from incompatible uses of adjacent and surrounding lands.

RESOURCE MANAGEMENT ZONE

- o lands and waters designated to accommodate specific actions not necessarily contributing to the enhancement of the ANSI or activities for particular resources such as wildlife,fisheries,mineral resources, etc. when these activities are not detrimental to features contained in the foregoing zones.

ACCESS ZONE

- o confined zone where development and support facilities for access are located (only if needed). Usually placed in resource management zone.

EARTH SCIENCE ANSI's:

STRICTLY PROTECTED EARTH SCIENCE CORE ZONE

- o protected lands and waters having a high degree of natural integrity, significance or sensitivity where natural processes prevail without man's intervention.
- o serves as a benchmark to monitor natural changes and the effect of management activities on adjacent areas.

MANAGED EARTH SCIENCE CORE ZONE

- o areas containing significant or sensitive geological features where environmental manipulation may be applied to maintain a particular feature or condition.
- o managed areas provide opportunities to maintain and study features which might otherwise be lost through natural processes and conversely manage processes to maintain desired features.

BUFFER ZONE

- o lands and waters designated to shield strictly protected and managed earth science core zones from incompatible uses of adjacent and surrounding lands.

RESOURCE MANAGEMENT ZONE

- o lands and waters designated to accommodate specific actions, not necessarily contributing to the enhancement of the ANSI or activities for particular resources such as wildlife,fisheries, mineral resources etc. where these activities are not detrimental to features contained in the foregoing zones.

ACCESS ZONE

- o confined zone where development and support facilities for access are located (only if needed). Usually placed in resource management zone.

FIGURE 5. MANAGEMENT GUIDELINES FOR LIFE SCIENCE ANSIs BY ZONE.

	Core Zone		Buffer Zone	Resource Management Zone	Access Zone
	strictly protected	managed			
AGRICULTURE					
Drained	N	N	N	M	M
Cultivated	N	M	M	M	M
Grazed	N	N	N	M	M
COMMERCIAL					
Tourism	N	N	N	N	M
Other	N	N	N	N	N
FIRE	N	M	M	M	N
FORESTRY					
Select. Log.	N	M	M	Y	M
Clearcutting	N	N	N	M	N
Reforest.	N	N	M	M	M
INDUSTRIAL	N	N	N	N	N
MINING					
Surface	N	N	N	M	N
Subsurface	M	M	M	M	N
Exploration	N	M	M	Y	M
PEST CONTROL	N	M	M	M	M
RECREATION					
Intensive	N	N	N	M	M
Passive	M	M	M	Y	Y
Hunting	N	M	M	M	N
Fishing	N	M	M	Y	N
RESEARCH	M	M	M	Y	Y
RESIDENTIAL	N	N	N	N	N
RIGHTS-OF-WAY					
Road	N	N	N	M	Y
Rail	N	N	N	N	N
Others	N	N	N	M	M
WILDLIFE					
Trapping	N	M	M	Y	N
Stocking	N	M	M	M	M
Hab. Manage.	N	M	M	M	M
Spec.Manage.	N	M	M	M	M

FIGURE 6. MANAGEMENT GUIDELINES FOR EARTH SCIENCE ANSIs BY ZONES.

	Core Zone		Buffer Zone	Resource Management Zone	Access Zone
	strictly protected	managed			
AGRICULTURE					
Drained	N	M	M	M	M
Cultivated	N	M	M	Y	Y
Grazed	N	M	M	Y	M
COMMERCIAL					
Tourism	N	N	N	N	M
Other	N	N	N	N	N
FORESTRY					
Select. Log.	N	M	M	Y	M
Clearcutting	N	N	N	M	N
Reforest.	N	M	M	Y	M
INDUSTRIAL	N	N	N	N	N
MINING					
Surface	N	M	M	Y	N
Subsurface	M	M	M	M	N
Exploration	M	M	M	Y	M
RECREATION					
Intensive	N	N	N	M	M
Passive	M	Y	Y	Y	Y
Hunting	M	M	M	M	M
Fishing	M	Y	Y	Y	Y
RESEARCH	Y	Y	Y	Y	Y
RESIDENTIAL	N	M	M	N	N
RIGHTS-OF-WAY					
Road	N	M	M	Y	Y
Rail	N	M	M	M	M
Other	N	M	M	M	M
WILDLIFE					
Trapping	M	M	M	Y	N
Stocking	M	Y	Y	Y	Y
Hab. Manage.	N	M	M	Y	M
Spec.Manage.	M	M	M	M	M

GLOSSARY TO ACCOMPANY FIGURES 3,4,5 AND 6.

This glossary contains general definitions for activities or potential uses of ANSIs. A range of activities are included within each definition. The potential activities which may occur in a specific ANSI zone are outlined in figures 5 and 6.

Agriculture: The agricultural activities of draining, cultivating (eg: cash crops or those suitable for wildlife feeding and browsing), and grazing by domestic stock.

Commercial: Commercial activities can be defined as tourism services which include accommodation, food and beverage, transportation and outfitting and service activities such as gasoline service stations, shopping plazas, car dealerships, fast food outlets, office buildings, warehouses, etc. and also the commercial exploitation of geological and biological specimens.

Fire: Fire can be considered a natural management tool and can sometimes be used to maintain an area in a specific stage of ecological succession. In other cases fire can be damaging to an area and must be suppressed using techniques which have a minimal environmental impact on the ANSI.

Forestry: The categories of selected logging, clearcutting and reforestation are potential activities that may occur in an ANSI. Specific activities such as the least disruptive time to selectively log, the removal of unproductive species and the removal of species to improve wildlife habitat must be weighed against ANSI values.

Industrial: Industrial activities are defined as manufacturing industries such as automobile factories, steel mills, pulp and paper mills, oil refineries and other smaller types of manufacturing or processing plants.

Mining: Mining activities are defined as surface (sand and gravel extraction, quarrying, open pit mining, peat extraction, etc.), subsurface (establishing or extending underground mines) and exploration for minerals such as precious metals, gas, petroleum, aggregate, or others.

Pest Control: Chemical or biological agents used as a means of pest control.

Recreation: Intensive forms of recreation are snowmobiling, motor boating, trail biking, camping, picnicking, hiking, or others and passive forms of recreation are outdoor education, viewing, photography, and others. Recreational hunting and fishing are also considered here.

Research: Research includes all non-destructive study, scientific enquiry and monitoring regarding the protected values of the ANSI.

Residential: Residential use would include apartments, condominiums, homes and cottages. Both individual units and larger subdivisions are considered in this definition.

Rights-of-Way : A right-of-way is defined as the strip of land over which a public road, railway line, hydro corridor, gas pipeline, or other linear development extends.

Wildlife: Only the basic categories of trapping, stocking and species and habitat management have been addressed. Hunting may be considered a management tool to protect ANSI values from predators or disease. Trapping may also be considered as a management tool used only in instances to protect ANSI values from predators or disease.

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